WE CLAIM:

1. An electrochemical cell comprising:

a container defining a positive cell terminal end and a negative cell terminal end;

a cathode disposed in the container and including a primary active material;

an extender different from the primary active material and present in an amount no greater than that of the primary active material;

an anode including an anode material disposed in the container adjacent the cathode; and

at least one separator disposed between the anode and cathode, and further disposed between the anode and extender.

2. The electrochemical cell as recited in claim 1, wherein the cell has a discharge capacity greater than that of an otherwise identical cell containing primary active material in place of the extender.

3. The electrochemical cell as recited in claim 1, wherein the amount is a weight.

4. The electrochemical cell as recited in claim 1, wherein the primary active material comprises manganese dioxide.

5. The electrochemical cell as recited in claim 4, wherein the primary active material is selected from the group consisting of electrolytic manganese dioxide, chemically-synthesized manganese dioxide, and natural manganese dioxide.

6. The electrochemical cell as recited in claim 1, wherein the extender has a discharge voltage lower than an initial discharge voltage of the primary active material.

7. The electrochemical cell as recited in claim 1, wherein the extender includes an oxide of copper.

8. The electrochemical cell as recited in claim 1, wherein the extender includes at least one of a metal, a sulfur-containing material, a hydroxide, and a salt.

9. The electrochemical cell as recited in claim 8, wherein the extender is selected from the group consisting of CuO, CuS, $Cu(OH)_2$, CuF_2, $Cu(IO_3)_2$, and copper oxyphosphate.

10. The electrochemical cell as recited in claim 9, wherein the extender comprises CuO and CuS.

11. The electrochemical cell as recited in claim 1, wherein the extender comprises Cu_2O.

12. The electrochemical cell as recited in claim 1, wherein the extender comprises a material identified generally by $M_xCu_yO_z$, wherein:

M is any element capable of producing mixed oxide compounds or complexes;

$1 \leq x \leq 5$;

$1 \leq y \leq 5$; and

$1 \leq z \leq 20$.

13. The electrochemical cell as recited in claim 12, wherein M is selected from the group consisting of Mn, Ni, Co, Fe, Sn, V, Mo, Pb, and Ag.

14. The electrochemical cell as recited in claim 12, wherein the copper based mixed oxide material further comprises an additional metal "A" identified in a compound $AM_xCu_yO_z$.

15. The electrochemical cell as recited in claim 14, wherein "A" is selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Mg, Sr and Ba.

16. The electrochemical cell as recited in claim 1, wherein the extender has a specific discharge capacity at least as high as that of the primary active material.

17. The electrochemical cell as recited in claim 1, wherein the extender has a specific discharge capacity of at least 1.5 Ah/cc.

18. The electrochemical cell as recited in claim 1, wherein at least a portion of the cathode is provided in an annular shape and wherein the primary active material is provided as stacked layers or tablets, as concentric rings, or as adjacent arcuate segments.

19. The electrochemical cell as recited in claim 1, having an anode:primary cathode capacity ratio greater than 0.98:1

20. The electrochemical cell as recited in claim 1, having an anode:primary cathode capacity ratio greater than 1:1.

21. The electrochemical cell as recited in claim 20, wherein the anode:primary cathode capacity ratio is greater than 1.03:1

22. The electrochemical cell as recited in claim 21, wherein the anode:primary cathode capacity ratio is between 1.05:1 and 1.50:1.

23. The electrochemical cell as recited in claim 22, wherein the anode:primary cathode capacity ratio is between 1.1:1 and 1.50:1

24. The electrochemical cell as recited in claim 1, having an anode capacity/cell internal volume ratio greater than 0.5 Ah/cc.

25. The electrochemical cell as recited in claim 24, wherein the anode capacity/cell internal volume ratio is greater than 0.55 Ah/cc.

26. The electrochemical cell as recited in claim 25, wherein the anode capacity/cell internal volume ratio is less than 1.0 Ah/cc.

27. The electrochemical cell as recited in claim 1, wherein the extender is disposed in the cathode.

28. The electrochemical cell as recited in claim 27, wherein the extender is mixed with the primary active material.

29. The electrochemical cell as recited in claim 1, wherein the cathode extender is disposed proximal to at least one of the positive cell terminal end and the negative cell terminal end.

30. The electrochemical cell as recited in claim 1, wherein, in the presence of alkaline electrolyte, the extender generates anode-fouling species soluble in the electrolyte and capable of migrating toward the anode.

31. The electrochemical cell as recited in claim 30, further comprising an agent that reduces anode fouling by the soluble species with respect to an identical cell without the agent.

32. The electrochemical cell as recited in claim 31, wherein the soluble species is a sulfur species.

33. The electrochemical cell as recited in claim 31, wherein the soluble species is a copper species.

34. The electrochemical cell as recited in claim 31, wherein the agent interacts with the soluble species to prevent at least some of the generated soluble species from migrating toward the anode.

35. The electrochemical cell as recited in claim 34, wherein the agent blocks the soluble species from migrating toward the anode.

36. The electrochemical cell as recited in claim 31, wherein the agent limits access of the electrolyte to the extender to reduce soluble species generation.

37. The electrochemical cell as recited in claim 31, wherein the agent is disposed in the cathode.

38. The electrochemical cell as recited in claim 37, wherein the agent is selected from the group consisting of polyvinyl alcohol, activated carbon, and a silicate.

39. The electrochemical cell as recited in claim 1, wherein the cathode further comprises expanded graphite.

40. The electrochemical cell as recited in claim 1, wherein the cathode further comprises at least one of natural graphite and synthetic graphite.

41. The electrochemical cell as recited in claim 1, wherein the primary active material comprises at least one of an oxide and a hydroxide of at least one of nickel, lead, and silver.

42. The electrochemical cell as recited in claim 1, wherein a layer comprising the extender and a conducting agent is disposed between the cathode and the container.

43. The electrochemical cell as recited in claim 42, wherein the layer comprising the extender and a conducting agent is disposed between a layer of a conducting agent and the container.

44. The electrochemical cell as recited in claim 42, wherein the layer comprising the extender and conducting agent is disposed on an inner surface of a layer of conducting agent disposed adjacent an inner surface of the container.

45. The electrochemical cell as recited in claim 1, further comprising an alkaline electrochemical cell.

46. An electrochemical cell comprising:

a container defining a positive cell terminal end and a negative cell terminal end;

a cathode disposed in the container and including a primary active material;

an extender different from the primary active material, wherein the extender has a discharge voltage lower than an initial discharge voltage of the primary active material;

an anode including an anode material disposed in the container adjacent the cathode; and

at least one separator disposed between the anode and cathode, and further disposed between the anode and extender.

47. The electrochemical cell as recited in claim 46, wherein the cell has a discharge capacity greater than that of an otherwise identical cell containing primary active material in place of the extender.

48. The electrochemical cell as recited in claim 46, wherein the amount is a weight.

49. The electrochemical cell as recited in claim 46, wherein the primary active material comprises manganese dioxide.

50. The electrochemical cell as recited in claim 49, wherein the primary active material is selected from the group consisting of electrolytic manganese dioxide, chemically-synthesized manganese dioxide, and natural manganese dioxide.

51. The electrochemical cell as recited in claim 46, wherein the extender includes an oxide of copper.

52. The electrochemical cell as recited in claim 46, wherein the extender includes at least one of a metal, a sulfur-containing material, a hydroxide, and a salt.

53. The electrochemical cell as recited in claim 52, wherein the extender is selected from the group consisting of CuO, CuS, $Cu(OH)_2$, CuF_2, $Cu(IO_3)_2$, and copper oxyphosphate.

54. The electrochemical cell as recited in claim 53, wherein the extender comprises CuO and CuS.

55. The electrochemical cell as recited in claim 46, wherein the extender comprises Cu_2O.

56. The electrochemical cell as recited in claim 46, wherein the extender has a specific discharge capacity of at least as high as that of the primary active material.

57. The electrochemical cell as recited in claim 46, wherein the extender has a specific discharge capacity of at least 1.5 Ah/cc.

58. The electrochemical cell as recited in claim 46, wherein at least a portion of the cathode is provided in an annular shape and wherein the primary active material is provided as stacked layers or tablets, as concentric rings, or as adjacent arcuate segments.

59. The electrochemical cell as recited in claim 46, having an anode:primary cathode capacity ratio greater than 0.98:1

60. The electrochemical cell as recited in claim 46, having an anode:primary cathode capacity ratio greater than 1:1.

61. The electrochemical cell as recited in claim 60, wherein the anode:primary cathode capacity ratio is greater than 1.03:1

62. The electrochemical cell as recited in claim 61, wherein the anode:primary cathode capacity ratio is between 1.05:1 and 1.50:1.

63. The electrochemical cell as recited in claim 61, wherein the anode:primary cathode capacity ratio is between 1.1:1 and 1.50:1.

64. The electrochemical cell as recited in claim 46, having an anode capacity/cell internal volume ratio greater than 0.5 Ah/cc.

65. The electrochemical cell as recited in claim 64, wherein the anode capacity/cell internal volume ratio is greater than 0.55 Ah/cc.

66. The electrochemical cell as recited in claim 65, wherein the anode capacity/cell internal volume ratio is less than 1.0 Ah/cc.

67. The electrochemical cell as recited in claim 46, wherein the extender is disposed in the cathode.

68. The electrochemical cell as recited in claim 67, wherein the extender is mixed with the primary active material.

69. The electrochemical cell as recited in claim 46, wherein the cathode extender is disposed proximal to at least one of the positive cell terminal end and the negative cell terminal end.

70. The electrochemical cell as recited in claim 46, wherein, in the presence of alkaline electrolyte, the extender generates anode-fouling species soluble in the electrolyte and capable of migrating toward the anode.

71. The electrochemical cell as recited in claim 70, further comprising an agent that reduces anode fouling by the soluble species with respect to an identical cell without the agent.

72. The electrochemical cell as recited in claim 71, wherein the soluble species is a sulfur species.

73. The electrochemical cell as recited in claim 71, wherein the soluble species is a copper species.

74. The electrochemical cell as recited in claim 71, wherein the agent interacts with the soluble species to prevent at least some of the generated soluble species from migrating toward the anode.

75. The electrochemical cell as recited in claim 74, wherein the agent blocks at least some of the soluble species from migrating toward the anode.

76. The electrochemical cell as recited in claim 71, wherein the agent limits access of the electrolyte to the extender to reduce soluble species generation.

77. The electrochemical cell as recited in claim 71, wherein the agent is disposed in the cathode.

78. The electrochemical cell as recited in claim 77, wherein the agent is selected from the group consisting of polyvinyl alcohol, activated carbon, and a silicate.

79. The electrochemical cell as recited in claim 46, wherein the cathode further comprises expanded graphite.

80. The electrochemical cell as recited in claim 46, wherein the cathode further comprises at least one of natural graphite and synthetic graphite.

81. The electrochemical cell as recited in claim 46, wherein the extender is identified generally by $M_xCu_yO_z$, wherein:

M is any element capable of producing mixed oxide compounds or complexes;

$1 \leq x \leq 5$;

$1 \leq y \leq 5$; and

$1 \leq z \leq 20$.

82. The electrochemical cell as recited in claim 81, wherein M is selected from the group consisting of Mn, Ni, Co, Fe, Sn, V, Mo, Pb, and Ag.

83. The electrochemical cell as recited in claim 81, wherein the copper based mixed oxide material further comprises an additional metal “A” identified in a compound $AM_xCu_yO_z$.

84. The electrochemical cell as recited in claim 83, wherein “A” is selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Mg, Sr and Ba.

85. The electrochemical cell as recited in claim 46, wherein a layer comprising the extender and conducting agent is disposed between the cathode and the container.

86. The electrochemical cell as recited in claim 85, wherein the layer comprising the extender and conducting agent is disposed between a layer of a conducting agent and the container.

87. The electrochemical cell as recited in claim 85, wherein the layer comprising the extender and conducting agent is disposed on an inner surface of a layer of conducting agent disposed adjacent an inner surface of the container.

88. The electrochemical cell as recited in claim 46, further comprising an alkaline electrochemical cell.

89. A method for producing an electrochemical cell, the method comprising the steps of:

(A) providing a cell container defining a positive cell terminal end and a negative cell terminal end;

(B) placing a cathode in the container, wherein the cathode comprises a primary active material;

(C) placing an extender in the container, the extender different from the primary active material and present in an amount no greater than that of the primary active material;

(D) placing an anode in the container; and

(E) providing at least one separator between the anode and cathode, and between the anode and the extender.

90. The method as recited in claim 89, wherein the cell has a discharge capacity greater than that of an otherwise identical cell containing primary active material in place of the extender.

91. The method as recited in claim 89, wherein step (B) further comprises placing the anode in an internal cavity defined by an anode-facing surface of the cathode.

92. The method as recited in claim 89, wherein the primary active material comprises manganese dioxide.

93. The method as recited in claim 92, wherein the primary active material is selected from the group consisting of electrolytic manganese dioxide, chemically-synthesized manganese dioxide, and natural manganese dioxide.

94. The method as recited in claim 89, wherein the extender has a discharge voltage lower than an initial discharge voltage of the primary active material.

95. The method as recited in claim 89, wherein the extender includes an oxide of copper.

96. The method as recited in claim 89, wherein the extender includes at least one of a metal, a sulfur-containing material, a hydroxide, and a salt.

97. The method as recited in claim 89, wherein the extender is selected from the group consisting of CuO, CuS, $Cu(OH)_2$, CuF_2, $CuMnO_4$, $Cu(IO_3)_2$, and copper oxyphosphate.

98. The method as recited in claim 96, wherein the extender comprises a mixture of CuO and CuS.

99. The method as recited in claim 89, wherein the extender comprises Cu_2O.

100. The method as recited in claim 89, wherein the extender is identified generally by $M_xCu_yO_z$, wherein:

M is any element capable of producing mixed oxide compounds or complexes;

$1 \leq x \leq 5$;

$1 \leq y \leq 5$; and

$1 \leq z \leq 20$.

101. The method as recited in claim 100, wherein M is selected from the group consisting of Mn, Ni, Co, Fe, Sn, V, Mo, Pb, and Ag.

102. The method as recited in claim 100, wherein the copper based mixed oxide material further comprises an additional metal "A" identified in a compound $AM_xCu_yO_z$.

103. The method as recited in claim 102, wherein "A" is selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Mg, Sr and Ba.

104. The method as recited in claim 89, wherein the extender has a specific discharge capacity of at least as high as that of the primary active material.

105. The method as recited in claim 89, wherein the extender has a specific discharge capacity of at least 1.5 Ah/cc.

106. The method as recited in claim 89, wherein at least a portion of the cathode provided in an annular shape and wherein the primary active material is in the form of stacked layers or tablets, as concentric rings, or adjacent arcuate segments.

107. The method as recited in claim 106, wherein step (A) comprises placing cathode extender proximal at least one of the positive cell terminal end and the negative cell terminal end.

108. The method as recited in claim 89, wherein the cell has an anode:primary cathode capacity ratio greater than 1:1.

109. The method as recited in claim 108, wherein the anode:primary cathode capacity ratio is greater than 1.03:1

110. The method as recited in claim 109, wherein the anode:primary cathode capacity ratio is between 1.05:1 and 1.50:1.

111. The method as recited in claim 110, wherein the anode:primary cathode capacity ratio is between 1.1:1 and 1.50:1.

112. The method as recited in claim 109, wherein the anode capacity/cell internal volume ratio is less than 1.0 Ah/cc.

113. The method as recited in claim 89, further comprising integrating the extender into the cathode.

114. The method as recited in claim 113, further comprising integrating the extender into the cathode prior to step (C).

115. The method as recited in claim 89, wherein step (C) further comprises maintaining the extender separate from the cathode.

116. The method as recited in claim 89, wherein step (C) further comprises placing the extender proximal to a terminal end of the cell.

117. The method as recited in claim 116, wherein, in the presence of alkaline electrolyte, the extender generates anode-fouling species soluble in the electrolyte and capable of migrating toward the anode.

118. The method as recited in claim 117, wherein the cathode further comprises an agent that reduces anode fouling by the soluble species with respect to an identical cell without the agent.

119. The method as recited in claim 118, wherein the soluble species is a sulfur species.

120. The method as recited in claim 118, wherein the soluble species is a copper species.

121. The method as recited in claim 118, wherein the agent interacts with the soluble species to prevent at least some of the generated soluble species from migrating toward the anode.

122. The method as recited in claim 118, wherein the agent blocks at least some of the soluble species from migrating toward the anode.

123. The method as recited in claim 118, wherein the agent limits access of the electrolyte to the extender to reduce the generation of soluble species.

124. The method as recited in claim 118, wherein the agent is disposed in the cathode.

125. The method as recited in claim 124, wherein the agent is selected from the group consisting of polyvinyl alcohol, activated carbon, and silicates.

126. The method as recited in claim 89, wherein step (C) further comprises applying to an inner surface of the container a layer comprising the extender and a conducting agent.

127. A method for producing an electrochemical cell, the method comprising the steps of:

(A) providing a cell container defining a positive cell terminal end and a negative cell terminal end;

(B) placing a cathode in the container, wherein the cathode comprises a primary active material;

(C) placing an extender in the container, wherein the extender is different from the primary active material and has a discharge voltage lower than an initial discharge voltage of the primary active material;

(D) placing an anode in the container; and

(E) providing at least one separator between the anode and the cathode, and between the anode and the extender.

128. The method as recited in claim 127, wherein the cell has a discharge capacity greater than that of an otherwise identical cell containing primary active material in place of the extender.

129. The method as recited in claim 127, wherein step (B) further comprises placing the anode in an internal cavity defined by an anode-facing surface of the cathode.

130. The method as recited in claim 127, wherein the primary active material comprises manganese dioxide.

131. The method as recited in claim 130, wherein the primary active material is selected from the group consisting of electrolytic manganese dioxide, chemically-synthesized manganese dioxide, and natural manganese dioxide.

132. The method as recited in claim 127, wherein the extender includes at least one of a metal, a sulfur-containing material, a hydroxide, and a salt.

133. The method as recited in claim 132, wherein the extender is selected from the group consisting of CuO, CuS, $Cu(OH)_2$, CuF_2, $Cu(IO_3)_2$, and copper oxyphosphate.

134. The method as recited in claim 133, wherein the extender comprises a mixture of CuO and CuS.

135. The method as recited in claim 127, wherein the extender is identified generally by $M_xCu_yO_z$, wherein:

M is any element capable of producing mixed oxide compounds or complexes;

$1 \leq x \leq 5$;

$1 \leq y \leq 5$; and

$1 \leq z \leq 20$.

136. The method as recited in claim 135, wherein M is selected from the group consisting of Mn, Ni, Co, Fe, Sn, V, Mo, Pb, and Ag.

137. The method as recited in claim 135, wherein the copper based mixed oxide material further comprises an additional metal "A" identified in a compound $AM_xCu_yO_z$.

138. The method as recited in claim 139, wherein "A" is selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Mg, Sr and Ba.

139. The method as recited in claim 127, wherein the extender has a specific discharge capacity of at least as high as that of the primary active material.

140. The method as recited in claim 127, wherein the extender has a specific discharge capacity of at least 1.5 Ah/cc.

141. The method as recited in claim 127, wherein at least a portion of the cathode provided in an annular shape and wherein the primary active material is in the form of stacked layers or tablets, as concentric rings, or adjacent arcuate segments.

142. The method as recited in claim 131, wherein step (A) comprises placing cathode extender proximal at least one of the positive cell terminal end and the negative cell terminal end.

143. The electrochemical cell as recited in claim 127, having an anode:primary cathode capacity ratio greater than 0.98:1

144. The method as recited in claim 127, having an anode:primary cathode capacity ratio greater than 1:1.

145. The method as recited in claim 144, wherein the anode:primary cathode capacity ratio is greater than 1.03:1

146. The method as recited in claim 145, wherein the anode:primary cathode capacity ratio is between 1.05:1 and 1.50:1.

147. The method as recited in claim 146, wherein the anode:primary cathode capacity ratio is between 1.1:1 and 1.50:1.

148. The method as recited in claim 127, having an anode capacity/cell internal volume ratio greater than 0.5 Ah/cc.

149. The method as recited in claim 148, wherein the anode capacity/cell internal volume ratio is greater than 0.55 Ah/cc.

150. The method as recited in claim 149, wherein the anode capacity/cell internal volume ratio is less than 1.0 Ah/cc.

151. The method as recited in claim 127, further comprising integrating the extender into the cathode.

152. The method as recited in claim 151, further comprising integrating the extender into the cathode prior to step (C).

153. The method as recited in claim 127, wherein step (C) further comprises maintaining the extender separate from the cathode.

154. The method as recited in claim 127, wherein, in the presence of alkaline electrolyte, the extender generates anode-fouling species soluble in the electrolyte and capable of migrating toward the anode.

155. The method as recited in claim 154, wherein the cathode further comprises an agent that reduces anode fouling by the soluble species with respect to an identical cell without the agent.

156. The method as recited in claim 155, wherein the soluble species is a sulfur species.

157. The method as recited in claim 155, wherein the soluble species is a copper species.

158. The method as recited in claim 155, wherein the agent interacts with the soluble species to prevent at least some of the generated soluble species from migrating toward the anode.

159. The method as recited in claim 158, wherein the agent blocks the soluble species from migrating toward the anode.

160. The method as recited in claim 155, wherein the agent limits access of the electrolyte to the extender to reduce the generation of soluble species.

161. The method as recited in claim 155, wherein the agent is disposed in the cathode.

162. The method as recited in claim 161, wherein the agent is selected from the group consisting of polyvinyl alcohol, activated carbon, and silicates.

163. The method as recited in claim 127, wherein the extender comprises Cu_2O.

164. An electrochemical cell comprising:
an anode
a cathode; and
a separator disposed between the anode and cathode,

wherein the anode has a capacity of at least 0.5 Ah per cubic centimeter of cell internal volume.

165. The electrochemical cell as recited in claim 164, wherein the anode capacity/cell internal volume ratio is greater than 0.55 Ah/cc.

166. The electrochemical cell as recited in claim 165, wherein the anode capacity/cell internal volume ratio is less than 1.0 Ah/cc.

167. The electrochemical cell as recited in claim 166, wherein the cathode comprises a primary active material and an extender different from the primary active material and present in an amount no greater than that of the primary active material.

168. The electrochemical cell as recited in claim 167, wherein the extender is included in the cathode.

169. The electrochemical cell as recited in claim 168, wherein the extender is mixed with the primary active material.

170. The electrochemical cell as recited in claim 169, wherein the extender is separate from the cathode.

171. The electrochemical cell as recited in claim 167, wherein the extender comprises Cu_2O.

172. The electrochemical cell as recited in claim 164, wherein the cathode further comprises expanded graphite.

173. The electrochemical cell as recited in claim 172, wherein the cathode further comprises at least one of natural graphite and synthetic graphite.

174. The electrochemical cell as recited in claim 164, wherein the cathode further comprises an oxide of copper.

175. The electrochemical cell as recited in claim 164, wherein the cathode further comprises manganese.

176. The electrochemical cell as recited in claim 164, wherein the cathode further comprises MnO_2.

177. The electrochemical cell as recited in claim 164, further comprising an alkaline electrochemical cell.

178. An electrochemical cell comprising:

an anode;

a cathode comprising a manganese oxide;

an extender; and

at least one separator disposed between the anode and both the cathode and the extender.

179. The electrochemical cell as recited in claim 178, wherein the manganese oxide is manganese dioxide.

180. The electrochemical cell as recited in claim 178, wherein the extender is selected from the group consisting of CuO, CuS, $Cu(OH)_2$, CuF_2, $Cu(IO_3)_2$, and copper oxyphosphate.

181. The electrochemical cell as recited in claim 178, wherein the extender comprises CuO and CuS.

182. The electrochemical cell as recited in claim 178, wherein the extender is identified generally by $M_xCu_yO_z$, wherein:

M is any element capable of producing mixed oxide compounds or complexes;

$1 \leq x \leq 5$;

$1 \leq y \leq 5$; and

$1 \leq z \leq 20$.

183. The electrochemical cell as recited in claim 182, wherein M is selected from the group consisting of Mn, Ni, Co, Fe, Sn, V, Mo, Pb, and Ag.

184. The electrochemical cell as recited in claim 182, wherein the copper based mixed oxide material further comprises an additional metal "A" identified in a compound $AM_xCu_yO_z$.

185. The electrochemical cell as recited in claim 184, wherein "A" is selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Mg, Sr and Ba.

186. The electrochemical cell as recited in claim 178, wherein the extender has a specific discharge capacity of at least as high as that of the primary active material.

187. The electrochemical cell as recited in claim 178, wherein the extender has a specific discharge capacity of at least 1.5 Ah/cc.

188. The electrochemical cell as recited in claim 178, wherein the extender is present in an amount no greater than that of the primary active material.

189. The electrochemical cell as recited in claim 178, having an anode:primary cathode capacity ratio greater than 0.98:1

190. The electrochemical cell as recited in claim 189, having an anode:primary cathode capacity ratio greater than 1:1.

191. The electrochemical cell as recited in claim 190, wherein the anode:primary cathode capacity ratio is greater than 1.03:1

192. The electrochemical cell as recited in claim 191, wherein the anode:primary cathode capacity ratio is between 1.05:1 and 1.50:1.

193. The electrochemical cell as recited in claim 192, wherein the anode:primary cathode capacity ratio is between 1.1:1 and 1.50:1.

194. The electrochemical cell as recited in claim 178, having an anode capacity/cell internal volume ratio greater than 0.5 Ah/cc.

195. The electrochemical cell as recited in claim 194, wherein the anode capacity/cell internal volume ratio is greater than 0.55 Ah/cc.

196. The electrochemical cell as recited in claim 195, wherein the anode capacity/cell internal volume ratio is less than 1.0 Ah/cc.

197. The electrochemical cell as recited in claim 178, wherein the extender is disposed in the cathode.

198. The electrochemical cell as recited in claim 178, wherein the cathode further comprises expanded graphite.

199. The alkaline electrochemical cell as recited in claim 198, wherein the expanded graphite is selected from the group consisting of natural and synthetic graphite.

200. The electrochemical cell as recited in claim 178, further comprising an alkaline electrochemical cell.

201. The electrochemical cell as recited in claim 178, wherein a layer comprising the extender and conducting agent is disposed between the cathode and the container.

202. The electrochemical cell as recited in claim 201, wherein the layer comprising the extender and conducting agent is disposed between a layer of a conducting agent and the container.

203. The electrochemical cell as recited in claim 201, wherein the layer comprising the extender and conducting agent is disposed on an inner surface of a layer of conducting agent disposed adjacent an inner surface of the container.

204. The electrochemical cell as recited in claim 178, wherein the extender comprises Cu_2O.

205. A cathode usable in an alkaline electrochemical cell, the cathode comprising:

a primary active material; and

an extender different from the primary active material and present in an amount no greater than that of the primary active material.

206. The cathode as recited in claim 205, wherein the primary active material comprises manganese dioxide.

207. The cathode as recited in claim 206, wherein the primary active material is selected form the group consisting of electrolytic manganese dioxide, chemically-synthesized manganese dioxide, and natural manganese dioxide.

208. The cathode as recited in claim 207, wherein the extender includes at least one of a copper-containing material, a sulfur-containing material, a hydroxide, and a salt.

209. The cathode as recited in claim 208, wherein the extender is selected from the group consisting of CuO, CuS, $Cu(OH)_2$, CuF_2, $Cu(IO_3)_2$, and copper oxyphosphate.

210. The as recited in claim 209, wherein the extender comprises CuO and CuS.

211. The cathode as recited in claim 205, wherein the extender is identified generally by $M_xCu_yO_z$, wherein:

M is any element capable of producing mixed oxide compounds or complexes;

$1 \leq x \leq 5$;

$1 \leq y \leq 5$; and

$1 \leq z \leq 20$.

212. The cathode as recited in claim 211, wherein M is selected from the group consisting of Mn, Ni, Co, Fe, Sn, V, Mo, Pb, and Ag.

213. The cathode as recited in claim 211, wherein the copper based mixed oxide material further comprises an additional metal "A" identified in a compound $AM_xCu_yO_z$.

214. The cathode as recited in claim 213, wherein "A" is selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Mg, Sr and Ba.

215. The cathode as recited in claim 205, wherein, in the presence of alkaline electrolyte, the extender generates anode-fouling species soluble in the electrolyte and capable of migrating out of the cathode.

216. The cathode as recited in claim 215, further comprising an agent that reduces an amount of anode-fouling species migrating out of the cathode compared to an identical cathode without the agent.

217. The cathode as recited in claim 216, wherein the agent captures at least some of the species.

218. The cathode as recited in claim 217, wherein the agent blocks at least some of the species from migrating toward the anode.

219. The cathode as recited in claim 215, wherein the soluble species is a sulfur species.

220. The cathode as recited in claim 215, wherein the soluble species is a copper species.

221. The cathode as recited in claim 216, wherein the agent is selected from the group consisting of polyvinyl alcohol, activated carbon, and silicates.

222. The cathode as recited in claim 205, wherein the extender has a specific discharge capacity of at least as high as that of the primary active material.

223. The cathode as recited in claim 205, wherein the extender has a specific discharge capacity of at least 1.5 Ah/cc.

224. The cathode as recited in claim 205, wherein at least a portion of the cathode provided in an annular shape and wherein the primary active material is in the form of stacked layers or tablets, as concentric rings, or adjacent arcuate segments.

225. The cathode as recited in claim 205, further comprising expanded graphite.

226. The cathode as recited in claim 226, wherein the expanded graphite is selected from the group consisting of natural and synthetic graphite.

227. The cathode as recited in claim 205, wherein extender comprises Cu_2O.

228. A cathode usable in an electrochemical cell, the cathode comprising:
a primary active material comprising a manganese oxide; and
an extender.

229. The cathode as recited in claim 228, wherein the extender has a voltage level relative to a reference electrode less than an initial voltage level of the primary active material relative to the reference electrode.

230. The cathode as recited in claim 228, wherein the manganese oxide is manganese dioxide.

231. The cathode as recited in claim 228, wherein the extender is selected from the group consisting of CuO, CuS, $Cu(OH)_2$, CuF_2, $CuMnO_4$, $Cu(IO_3)_2$, and copper oxyphosphate.

232. The cathode as recited in claim 231, wherein the extender comprises CuO and CuS.

233. The cathode as recited in claim 228, wherein the extender has a specific discharge capacity of at least as high as that of the primary active material.

234. The cathode as recited in claim 228, wherein the extender has a specific discharge capacity of at least 1.5 Ah/cc.

235. The cathode as recited in claim 228, wherein the extender is present in an amount no greater than that of the primary active material.

236. The cathode as recited in claim 228, wherein the cathode further comprises expanded graphite.

237. The cathode as recited in claim 236, wherein the expanded graphite is selected from the group consisting of natural and synthetic graphite.

238. The cathode as recited in claim 228, wherein the extender comprises Cu_2O.

239. An extender usable in combination with a cathode of an electrochemical cell, the cathode comprising a primary active material, the extender being different than the primary active material and present in an amount no greater than that of the primary active material.

240. The cathode as recited in claim 239, wherein the extender has a voltage level relative to a reference electrode less than an initial voltage level of the primary active material relative to the reference electrode.

241. The extender as recited in claim 239, wherein the extender includes at least one of a copper-containing material, a sulfur-containing material, a hydroxide, and a salt.

242. The extender as recited in claim 239, wherein the extender is selected from the group consisting of CuO, CuS, $Cu(OH)_2$, CuF_2, $CuMnO_4$, $Cu(IO_3)_2$, and copper oxyphosphate.

243. The extender as recited in claim 241, wherein the extender comprises a mixture of CuO and CuS.

244. The extender as recited in claim 239, wherein the extender is identified generally by $M_xCu_yO_z$, wherein:

M is any element capable of producing mixed oxide compounds or complexes;

$1 \leq x \leq 5$;

$1 \leq y \leq 5$; and

$1 \leq z \leq 20$.

245. The extender as recited in claim 244, wherein M is selected from the group consisting of Mn, Ni, Co, Fe, Sn, V, Mo, Pb, and Ag.

246. The extender as recited in claim 245, wherein the copper based mixed oxide material further comprises an additional metal "A" identified in a compound $AM_xCu_yO_z$.

247. The extender as recited in claim 246, wherein "A" is selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Mg, Sr and Ba.

248. The extender as recited in claim 239, wherein the extender generates a species in the presence of an alkaline electrolyte that is soluble in the electrolyte and capable of fouling an anode of an electrochemical cell, the extender comprising an agent that interacts with at least some of the species.

249. The extender as recited in claim 248, wherein the agent adsorbs at least some of the species.

250. The extender as recited in claim 248, wherein the agent blocks at least some of the species.

251. The extender as recited in claim 248, wherein the soluble species is a sulfur species.

252. The extender as recited in claim 248, wherein the agent is selected from the group consisting of polyvinyl alcohol, activated carbon, and silicates.

253. The extender as recited in claim 239, having a specific discharge capacity of at least as high as that of the primary active material.

254. The extender as recited in claim 239, having a specific discharge capacity of at least 1.5 Ah/cc.

255. The extender as recited in claim 239, further comprising Cu_2O.

256. An electrochemical cell, comprising:
an anode;
a cathode; and
a separator disposed between the anode and the cathode,
wherein at least a portion of the cathode is identified generally by $M_xCu_yO_z$, wherein:
M is any element capable of producing mixed oxide compounds or complexes;
$1 \leq x \leq 5$;
$1 \leq y \leq 5$; and
$1 \leq z \leq 20$.

257. The electrochemical cell as recited in claim 256, wherein M is selected from the group consisting of Mn, Ni, Co, Fe, Sn, V, Mo, Pb, and Ag.

258. The electrochemical cell as recited in claim 256, wherein the copper based mixed oxide material further comprises an additional metal "A" identified in a compound $AM_xCu_yO_z$.

259. The electrochemical cell as recited in claim 258, wherein "A" is selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Mg, Sr and Ba.